RESEARCH NEWSFLASH

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Evaluation of Thatch and Verdure

on a 4-Year-Old Stand of Creeping Bentgrass on a Modified Soil

by Henry Wetzel III, Ph.D.

One of the objectives of our bentgrass breeding program is to search for superior varieties under conditions requiring reduced management inputs. Under these management conditions, we have found that Alpha and T-1 creeping bentgrasses do not accumulate any more thatch than Penn A-4, which is a grass that some golf course superintendents recognize requires high maintenance to maintain high quality.

On 18 July 06, I sampled our 2002 creeping bentgrass turf plots, to determine the relative depths of thatch among the various varieties. Our hypothesis was that higher shoot density varieties such as Alpha, T-1 and Penn A-4 would accumulate more thatch when compared to Penncross, which exhibits a more open growth habit with less shoots per square inch.

This research green was triplex mowed at 0.156" three times per week with clippings returned to turf surface. Turf received 3 lbs. nitrogen annually and was irrigated twice per day during the growing season to prevent drought stress. The green consisted of a modified soil which received one sand topdressing application in the spring of the year. Figure 1 demonstrates how I collected the turf/soil profile cores with a Mascaro sampler and shows the thatch and intermediate layers page 2

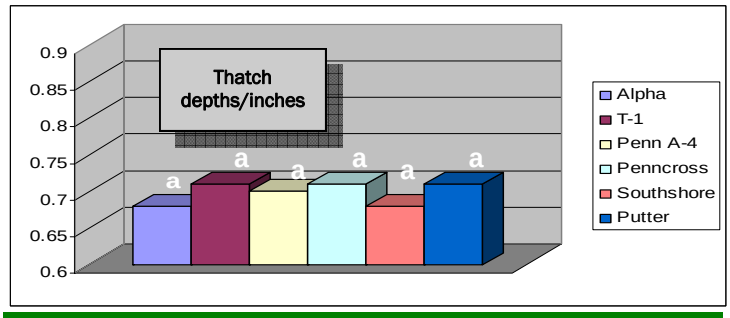


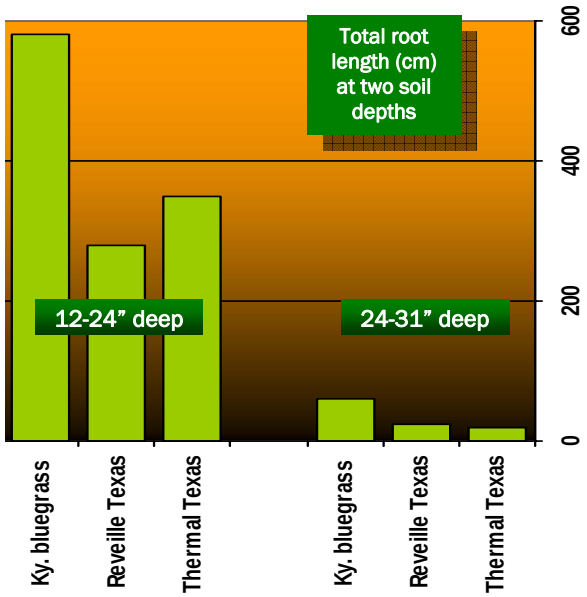
Figure 2. Thatch measurements were taken using a Mascaro soil profile sampler. Five turf/soil profile cores were taken in each of three replicate plots per bentgrass variety on 18 Jul 06 from a 2002 bentgrass variety putting green trial. The y axis is the thatch depth in inches. The average thatch depth among all varieties was 0.70 inches and there were no significant differences among varieties.

Where's Waldo: Can you spot the plot of Texas bluegrass in this photo? This picture was taken during a July 2006 drought at turf plots at Summit Hall Turf Farm in Maryland. The 'Thermal' plot, planted in a square right in the center of the photo, is undistinguished during a drought from the Kentucky bluegrass varieties surrounding it.

Texas Bluegrass Fad Fizzling Fast

by Doug Brede, Ph.D.

Distributors have asked about the Texas hybrid bluegrass craze that hit the country with the release of 'Reveille' and 'Thermal.' It seems to be rapidly cooling, due to disappointing drought research and seed production issues. Dale Bremer, Steve Keeley, Jack Fry, and Kemin Su at Kansas State measured the root depth of two Texas hybrids, and compared them to an ordinary Kentucky bluegrass. The results fly in the face of advertising which page 2



New research from Kansas State University shows that Texas bluegrass is not deeper rooted than ordinary Kentucky bluegrass, as shown at these two soil depth profiles.

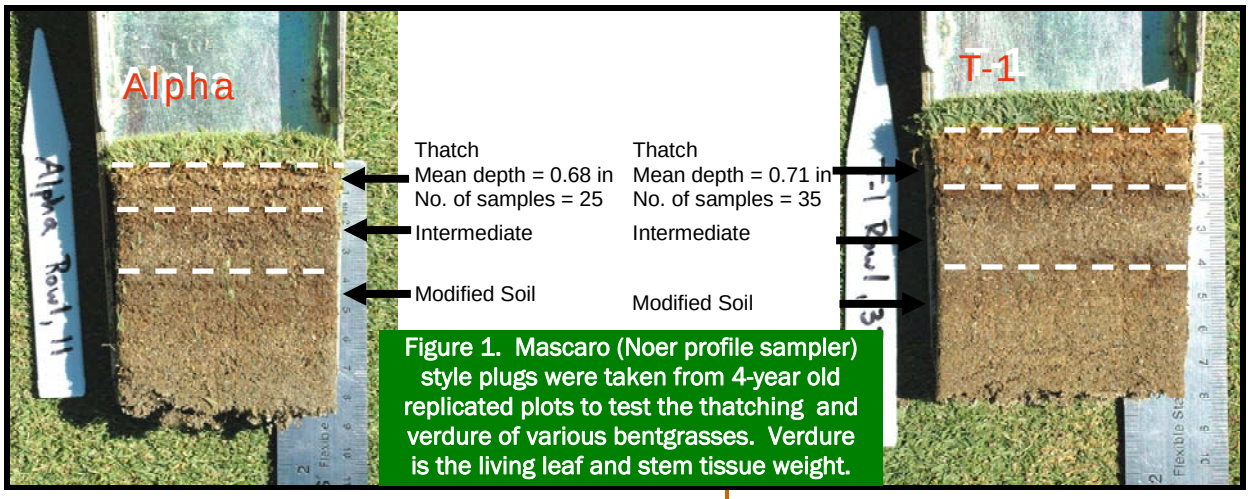


Figure 1. Mascaro (Noer profile sampler) style plugs were taken from 4-year old replicated plots to test the thatching and verdure of various bentgrasses. Verdure is the living leaf and stem tissue weight.

Bentgrass Thatch Evaluation, continued

and where the modified soil exists housing primarily root tissue.

The results in Figure 2 were surprising to me in that all the cores collected among the respective varieties had a fairly similar quantity of thatch accumulation and the average thatch depth was 0.70 inch. On 28 Sep 06, I sampled the same research green by pulling 3 cup-cutter size turf/soil cores from one plot of each respective variety designated in Figure 3. The objective was to determine the quantity of verdure (i.e., leaf and shoot mass within the area, 12.6 sq. in., of a cup cutter). Leaf and stem area above the crown of the bentgrass plant was excised, oven dried and weighed.

T-1, L-93 and Alpha had a significantly greater verdure compared to Penn A-4 and Penncross (Figure 3). This suggests more plants and greater photosynthetic capabilities per unit area of the former verses the latter varieties.

Coupled with the data presented in Figure 2, one can have the benefits of more plants and greater photosynthesis resulting in stored energy for the plants during stressful environmental conditions with varieties like Alpha, T-1 and L-93, without excessive thatch accumulation.

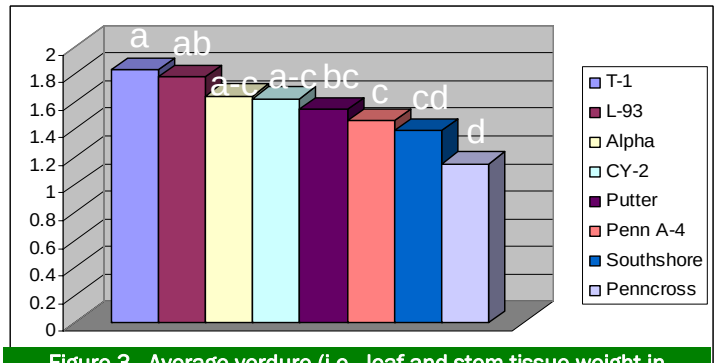


Figure 3. Average verdure (i.e., leaf and stem tissue weight in grams) within a golf cup cutter size area of 12.6 sq. in. The y-axis represents the average weight in grams of leaf and stem tissue from 3 cup cutter size turf/soil cores pulled on 28 Sep 06 from one plot of a particular variety from a 2002 bentgrass trial. Means followed by the same letter are not significantly different (p<0.05).

Texas , continued

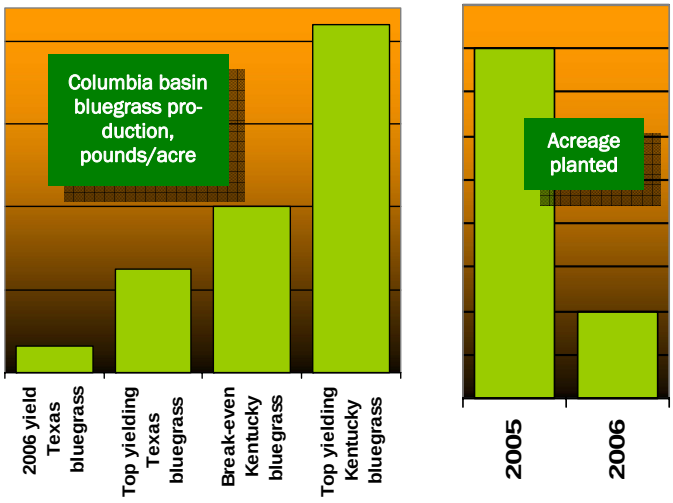
implies that Texas hybrid bluegrass tolerates heat and drought better than Kentucky bluegrass.

To test the grasses, KSU built a barn-sized rain-out shelter which rolls into position during a rainstorm, covering the plots and producing a reliable drought.

Most surprising was rooting depth. At the deeper soil profiles, Texas hybrids had half the root length as Kentucky bluegrass (see graph, page 1). Quality differences during the droughts were minimal.

But the real killer of the Texas hybrid bluegrass is in the seed fields of the Northwest. After a few crops of seed production, the hybrids are proving to be miserably low seed yielders (see graph below). 2006 harvest yields discouraged seed farmers.

One of the reasons for this is that Texas bluegrass has separate male and female plants. Seed is borne on only half the plants in the field. A stand that looks like a bumper crop at harvest, puts half the seed in the barn compared with a typical Kentucky bluegrass.



Seed yields of the Texas hybrids have been disappointingly low in Washington State seed fields (left graph). Even a top yielding Texas hybrid field is producing below the economic threshold (the "break-even" point) for grass seed farmers. As a result, Texas hybrid seed acreage planted in the Columbia basin has declined dramatically this year (right graph), according to production sources.